AGENDA ITEM K-1

CITY OF LODI
COUNCIL COMMUNICATION

AGENDA TITLE: **Adopt Resolution Implementing Surface Water Treatment Program Utilizing Woodbridge Irrigation District Contractual Allotment and Authorizing Solicitation of Water Treatment Plant Proposals**

MEETING DATE: **April 19,2006**

PREPARED BY: **Public Works Director**

RECOMMENDED ACTION: That the City Council adopt a resolution implementing the surface water treatment program utilizing the Woodbridge Irrigation District (WID) 6,000 acre-feet contractual allotment by authorizing the solicitation of proposals from three water consulting firms for preliminary water treatment plant studies. **This staff report contains similar information to that presented at the March 1, 2006 Council meeting. Additional information to address comments received by staff have been added and are identified by bold text.**

BACKGROUND INFORMATION: On several past occasions, the City Council has received information regarding the acquisition and usage of 6,000 acre-feet per year of Mokelumne River water from Woodbridge Irrigation District. In May 2003, the City contracted with WID to provide untreated surface water to Lodi for 40 years. At the September 21, 2004 Shirtsleeve Meeting, the Water Supply Options Report was presented to the Council. At the April 19, 2005 Shirtsleeve meeting, staff again presented alternatives for implementing the 6,000 acre-feet per year surface water supply. On April 20, 2005, Council approved hiring a consultant to further study and develop a recommendation for full implementation of the WID surface water supply. On June 9, 2005, Council was sent a copy of the WID Surface Water Implementation Study. On November 1, 2005, Council received a presentation from the consultant and the recommendation that the City go to a conjunctive use water supply system – one that utilizes ground water and treated surface water to serve the demands of Lodi's customers.

Over the course of the past three years, a number of alternatives have been considered with the most effort focused upon "treat and drink" and "groundwater recharge." Some of the other alternatives included: 1) injection well recharge, 2) raw water irrigation of parks and schools, 3) recharge ponds within the City limits, **4)** recharge ponds using North San Joaquin Water Conservation District facilities, 5) East Bay Municipal Utility District banking, and 6) interim supply to Stockton recharge ponds.

At the regional level, City of Lodi has been participating in several water supply programs that will, in the future, bring additional water supplies to the City and the other agencies in the region. Examples include the Mokelumne River Water and Power Authority MORE Project that seeks to capture unappropriated flows in the Mokelumne River. Also, Lodi is collaborating with Stockton East Water District and North San Joaquin Water Conservation District on a pilot-scale recharge project next to Micke Grove Park. North San Joaquin Water Conservation District recently passed a land-use assessment for a pilot groundwater recharge project and is evaluating multiple sites in its district.

APPROVED: _____
Blair King, City Manager

At present, the City is using 17,300 acre-feet per year to meet the demands of existing customers. Resulting from the installation of water meters that is currently underway, a reduction in demand (through conservation) is realistically expected to be 2,400 acre-feet per year. Therefore, the anticipated future demand for existing Lodi will be approximately 15,000 acre-feet per year. As presented in the 2005 Urban Water Management Plan, the safe, long-term yield of the groundwater underlying the City is 15,000 acre-feet per year.

The City Council is being asked to support staffs recommendation to pursue the "treat and drink" alternative on the basis it is the "highest and best use" of the WID water, given a number of factors that are compared below.

cost

The estimated construction cost for a surface water treatment plant and associated facilities is estimated to be up to $25 million. These costs are inclusive of site acquisition, surface water diversion piping, ultrafiltration (without pretreatment) using membrane technology, chlorine disinfection, distribution piping, and storage tanks. This alternative does eliminate the need to construct additional wells to serve new demands.

The estimated construction cost for a groundwater recharge program is estimated to be $30 million. This assumes a recharge field 88 acres in size adjacent to the WID canal at $300,000 per acre, including site improvements and pipe appurtenances. Construction of five new wells is included in the estimate.

In either scenario, new development is expected to fund the capital improvements. Operating and maintenance costs are considerably higher for the "treat and drink" alternative. The estimated change to current rates would be an increase of approximately 15%, if the burden were shared City-wide.

Staff has received comments stating the recharge option costs have been over estimated and that the Micke Grove Trust lands could be acquired for constructing the recharge basins at a minimal cost. However, the current lease holder has stated intent to farm the Trust property and may not be willing to surrender the lease for the purpose of constructing recharge basins. Therefore, the estimate is based on purchasing the land needed for constructing the recharge basins in the immediate vicinity of the Lodi City limits or adjacent to the current General Plan boundary. Certainly, if land costs are lower, the recharge project would have a lower capital and operating cost compared to the treatment plant option. However, this assumes current conditions pertaining to water quality (see later comments).

Groundwater Rights

The rights to groundwater resulting from surface recharge are not clearly defined in a groundwater basin in an overdraft condition that is not yet adjudicated. Further, the City is assuming we would be getting credit from a recharge program toward meeting requirements of SB 221/SB 610 Water Supply Assessments. Discussions with legal experts on the issue indicated the City's rights to recharged groundwater would best be secured by obtaining a formal resolution from each water agency within the basin limits. It is staffs opinion this could be a daunting task. And, the recommendation relative to securing water supply credits to meet SB221/SB610 requirements was to treat and drink the water.

Benefit

Criteria to evaluate benefits to the City of Lodi and the region include: 1) direct benefit to the groundwater resource, 2) long-term water quality, 3) sharing the regional burden, and 4) time of use Each is discussed below.

Benefit to the Groundwater Resource

In the context that the water demands of existing Lodi are matched by the safe yield of the groundwater resource, the "treat and drink" alternative eliminates further mining of the groundwater and, thereby, results in the highest direct benefit.

Groundwater recharge programs have a number of inherent **losses,** including evaporation, uptake by plant materials, and capture within the soil column. These **losses** can be as high as 30 percent **although proper basin location and construction could improve performance and efficiency.** In addition, the recharge water, once it reaches the groundwater "stream", moves away for the Lodi point of use and toward the central-county depression.

Currently, the groundwater depression is located south and east of Lodi. Recent modeling work performed by San Joaquin County suggests the groundwater depression will shift from its current location to a location (south easterly) more directly east or northeast of Lodi over the next 20+ years. If this prediction becomes reality, the City would want to construct recharge basins at the westerly boundary of the City to assure the City could then extract the water from the ground through its wells.

Long-Term Water Quality

Lodi has long enjoyed a high quality of water that is pumped from the ground through wells that are clustered in relatively close proximity to the Mokelumne River. Not only has the quality of water been excellent, but the yield from each well has been relatively high, with an average of approximately 1,400 gallons per minute per well. Based upon experience and water quality information for areas southerly and westerly of the City, new wells in these areas are expected to have higher salinity levels and lower yields. **As the basin continues to be overdrafted, there is a high risk that groundwater quality will degrade and that future wells will need treatment systems that are not included in the cost estimate.**

For the "treat and drink" alternative, the salinity in the water will be lower than found in the groundwater and this will result in a lowering of salinity levels in the wastewater. This provides a long-term tangible benefit to the City as the State is expected to impose limits on salinity for discharges to the Delta. Lowering the salinity of our "source water" will avoid very costly improvements to remove salinity at the wastewater end of the use cycle.

A groundwater recharge program will essentially not alter the water quality characteristics of the City's groundwater resource.

The "treat and drink" alternative will result in chlorination of the entire City water system, as is required by State regulation. Most in the industry agree that chlorination requirements will also be imposed upon all groundwater users in the foreseeable future. Lodi is the largest community in the State solely using groundwater without regular chlorination.

Sharing the Regional Burden

On a regional basis, the various cities and agencies are collaboratively working to enhance the supply side of the region's groundwater resource. On a conceptual level, the principal strategies to achieve this goal include: 1) securing additional surface water resources, 2) elimination or deferral of further groundwater pumping, 3) banking through recharge or deferral of pumping, and 4) regional recharge. The MORE project was described above. Stockton Delta Water Treatment Plant will begin treating 56,000 acre-feet per year within three years. Lodi's water treatment plant can begin producing 6,000 acre-feet per year of drinking water within 4.5 years. A recharge program would provide somewhat **less** regional benefit by virtue of the losses described above.

Time of Use

Water demands within the City are highest in the spring, summer and fall. Conversely, the lowest demands are in the winter. Our WID water is available from March 1 through October 15 and this perfectly matches our highest demand period. Lodi has secured high quality water that melds with demands, both in quantity and in time. To store such water in the ground to be pumped out later does not make a lot of sense.

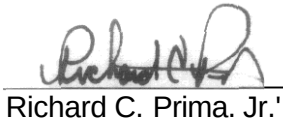
As is the strategy of many of the regional recharge programs, excess water that usually becomes available in the winter months is diverted to fallow fields for percolation. Often times, this water is sediment laden and well suited for groundwater recharge. The City of Lodi could pursue a similar strategy by diverting storm drainage water to recharge areas and/or by altering designs for new developments to incorporate recharge facilities.

Recommendation

Staff is requesting City Council approval to initiate implementation of a surface water treatment program that would utilize the WID 6,000 acre-feet contractual allotment. The first steps will **be** to solicit proposals from three water consulting firms: HDR. RMC, and West Yost &Associates, all of whom were previously pre-qualified for Lodi water studies. The time frame from proposal solicitation to final deliverables is 12 months and the estimated cost is expected to range from $250,000 to $500,000. Three alternative treatment plant scenarios are currently envisioned: 1) stand-alone Lodi plant, 2) partnering in the Stockton Delta Water Treatment Plant, and 3) stand-alone Lodi plant sharing "source water" with the Stockton Delta Water Treatment Plant.

FISCAL IMPACT: No fiscal impact at this time. Staff will return to Council requesting authorization to execute a professional services agreement with the successful firm.

FUNDING AVAILABLE: Not applicable.



Richard C. Prima. Jr.'
Public Works Director

Prepared by F **Wally Sandelin,** City **Engineer**
RCP/FWS/pmf

RESOLUTION NO. 2006-____

A RESOLUTION OF THE LODI CITY COUNCIL
IMPLEMENTING SURFACE WATER TREATMENT
PROGRAM UTILIZING WOODBRIDGE IRRIGATION
DISTRICT CONTRACTUAL ALLOTMENT AND
AUTHORIZING SOLICITATION OF WATER TREATMENT
PLANT PROPOSALS

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NOW, THEREFORE, BE IT RESOLVED, that the Lodi City Council hereby implements the surface water treatment program utilizing the Woodbridge Irrigation District 6,000 acre-feet contractual allotment by authorizing the solicitation of proposals from three water consulting firms for preliminary water treatment plant studies.

Dated: April 19, 2006

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I hereby certify that Resolution No. 2006-____ was passed and adopted by the City Council of the City of Lodi in a regular meeting held April 19, 2006, by the following vote:

AYES: COUNCIL MEMBERS –

NOES: COUNCIL MEMBERS –

ABSENT: COUNCIL MEMBERS –

ABSTAIN: COUNCIL MEMBERS –

SUSAN J. BLACKSTON
City Clerk

K-1

WID Water Supply Utilization

- Background – Basin Overdraft
- WID Contract **(2003)**
  - **6,000** acre feetlyear (afa), about **1/3** of current use
  - **$1.2 million/year** regardless of use
  - 3-year "bank", 4-year bank extension being negotiated
- Alternatives Considered
  - recharge (injection, surface)
  - treat & drink
  - other
- Cost (table)
- Groundwater Rights & Supply Assessments
  - Long-term groundwater rights issues
  - Mandated supply assessments
- Benefit to Groundwater Resource (maps)
- Long-Term Water Quality (map)
- Sharing the Regional Burden
  - Overdraft is **150,000** to **200,000** afa
  - Stockton's proposed treatment plant – **33,600** afa initially
  - Lodi's 6,000 afa will not solve long-term problem
- Time of Use
  - WID water availability matches Lodi's high demand period
  - Most recharge programs based on **winter/peak** flows
- Recommendation
  - "Highest and Best Use" of the water is to treat and drink
  - Further work and studies need to be done to refine any options
  - City should continue groundwater recharge project participation using storm water, possibly WID water on interim basis

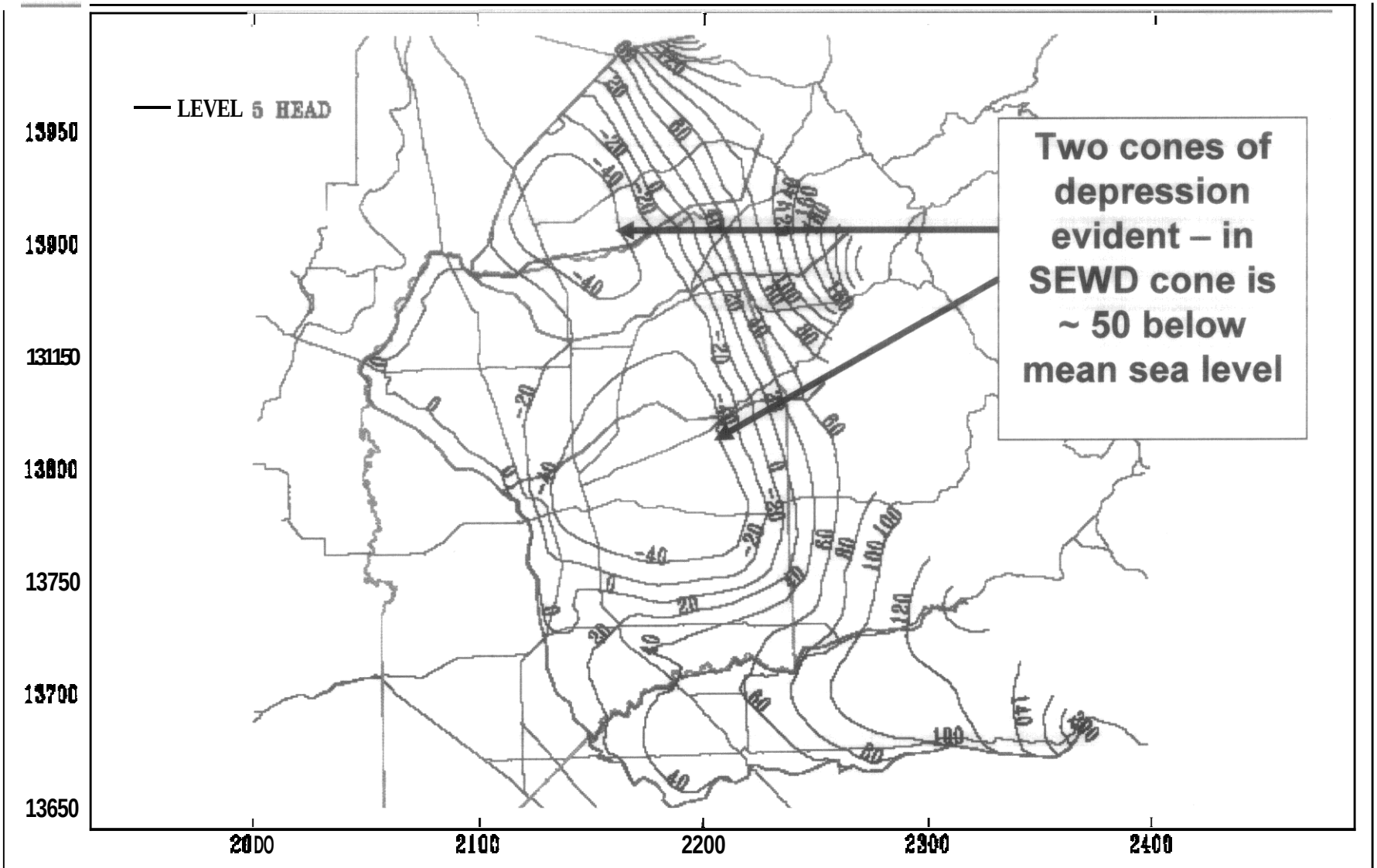
Comparison of Planning Cost Estimates

Recharge Basin

	2005	2006
Construction of Recharge Basin	$593,000	$593,000
Construction Contingency (20%)	$119,000	$119,000
Engineering and Other Fees (15%)	$89,000	$89,000
Subtotal	$801,000	$801,000
Purchase Land for Basin	$17,600,000	$26,400,000[1]
CEQA/NEPA	$100,000	$100,000
Water Wells		$3,000,000[2]
Total	$18,501,000	$30,301,000

	2005	2006
Surface Water Treatment Plant and Associated Transmission	$25,700,000	$20,000,000[3]
Construction Contingency	$5,100,000	$4,000,000
Engineering and Other Fees (15%)	$3,900,000	$3,000,000
Subtotal	$34,700,000	$27,000,000
Purchase Land for Plant	$1,000,000	$1,500,000[4]
CEQA/NEPA	$1,000,000	*$1,000,000*
Total	$36,700,000	$29,500,000

Simulated Groundwater Table - Current "2003" Conditions



CDM

Simulated Water Table
"Current Conditions"

GBA IRWMP

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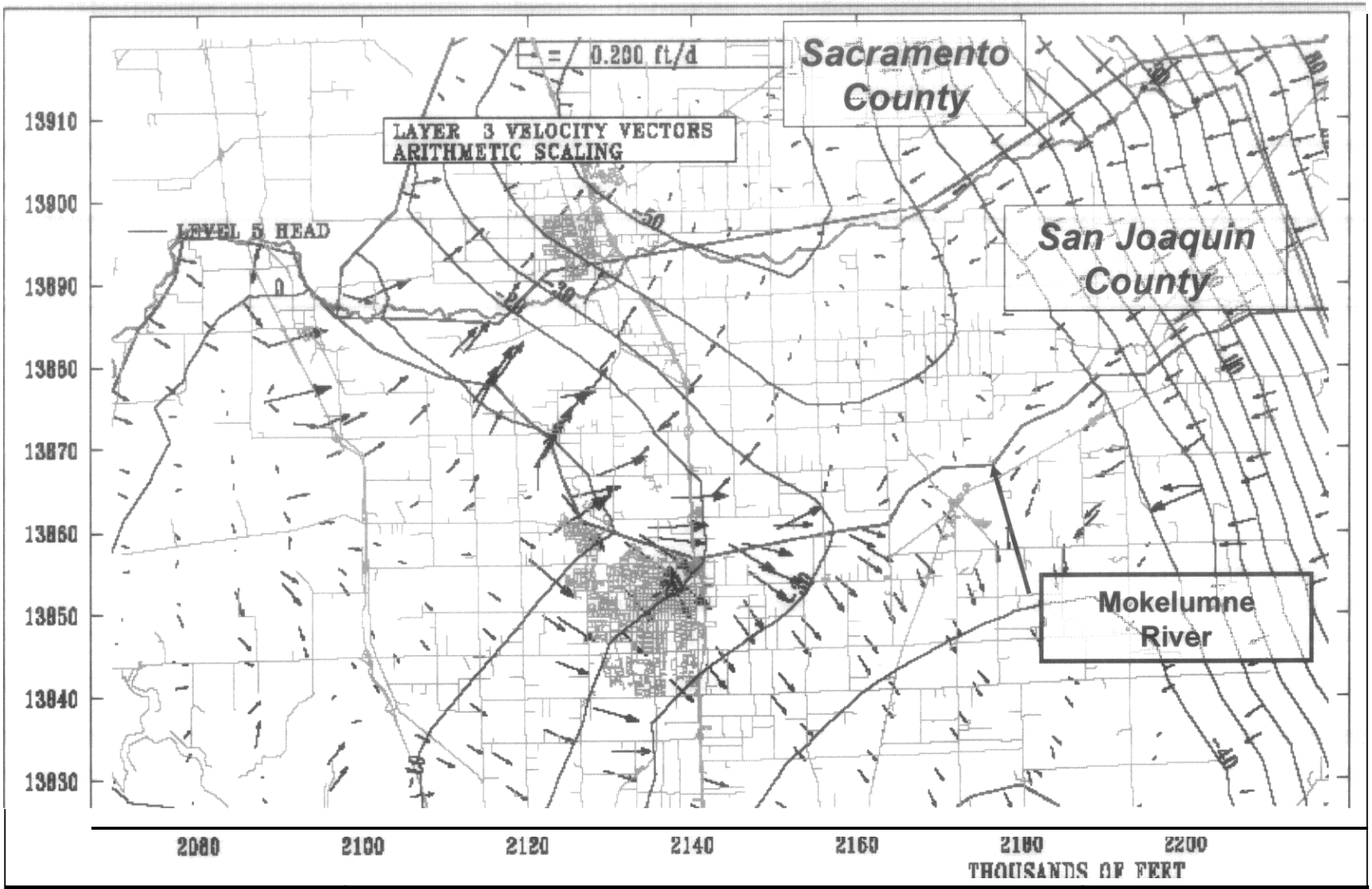
Simulated Groundwater Table - Current "2003" Conditions – Lodi Area



CDM

Simulated Groundwater Table
With Velocity Vectors – Lodi Area
Current Conditions
GBA IRWMP

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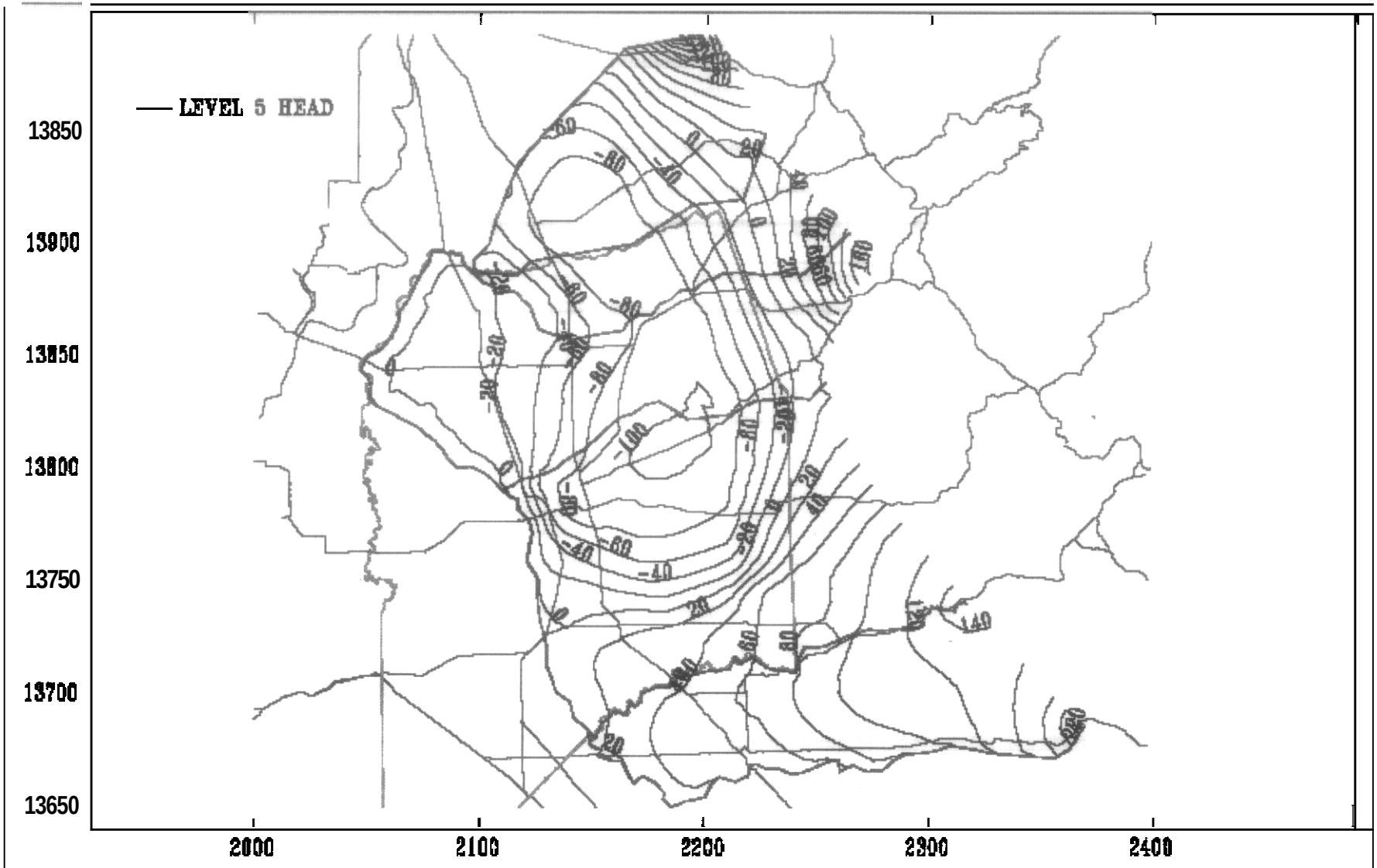
Simulated Groundwater Table - Equilibrium Future No Action Conditions



CDM

Simulated Groundwater Table
2030 No Action "Equilibrium Conditions"

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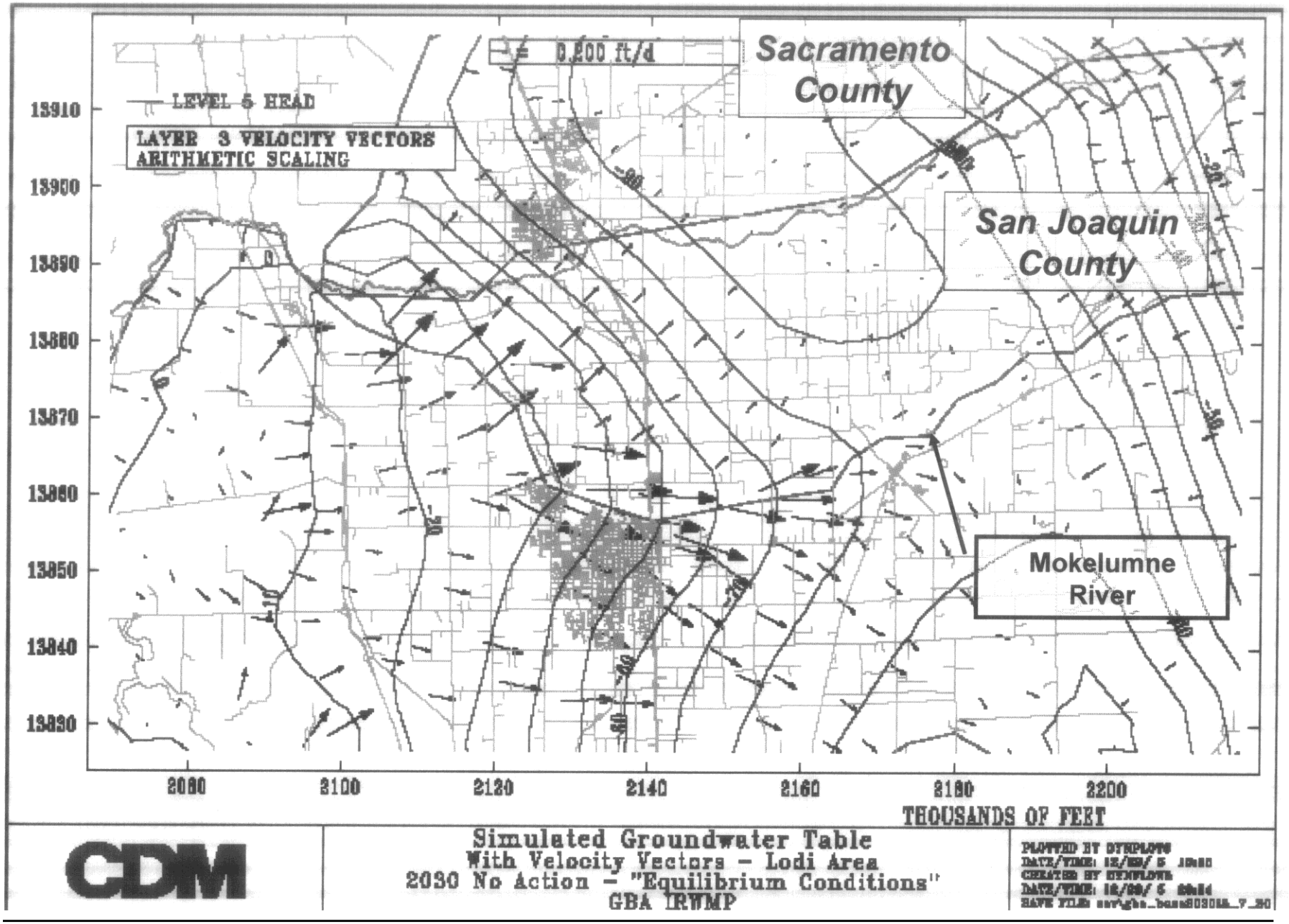
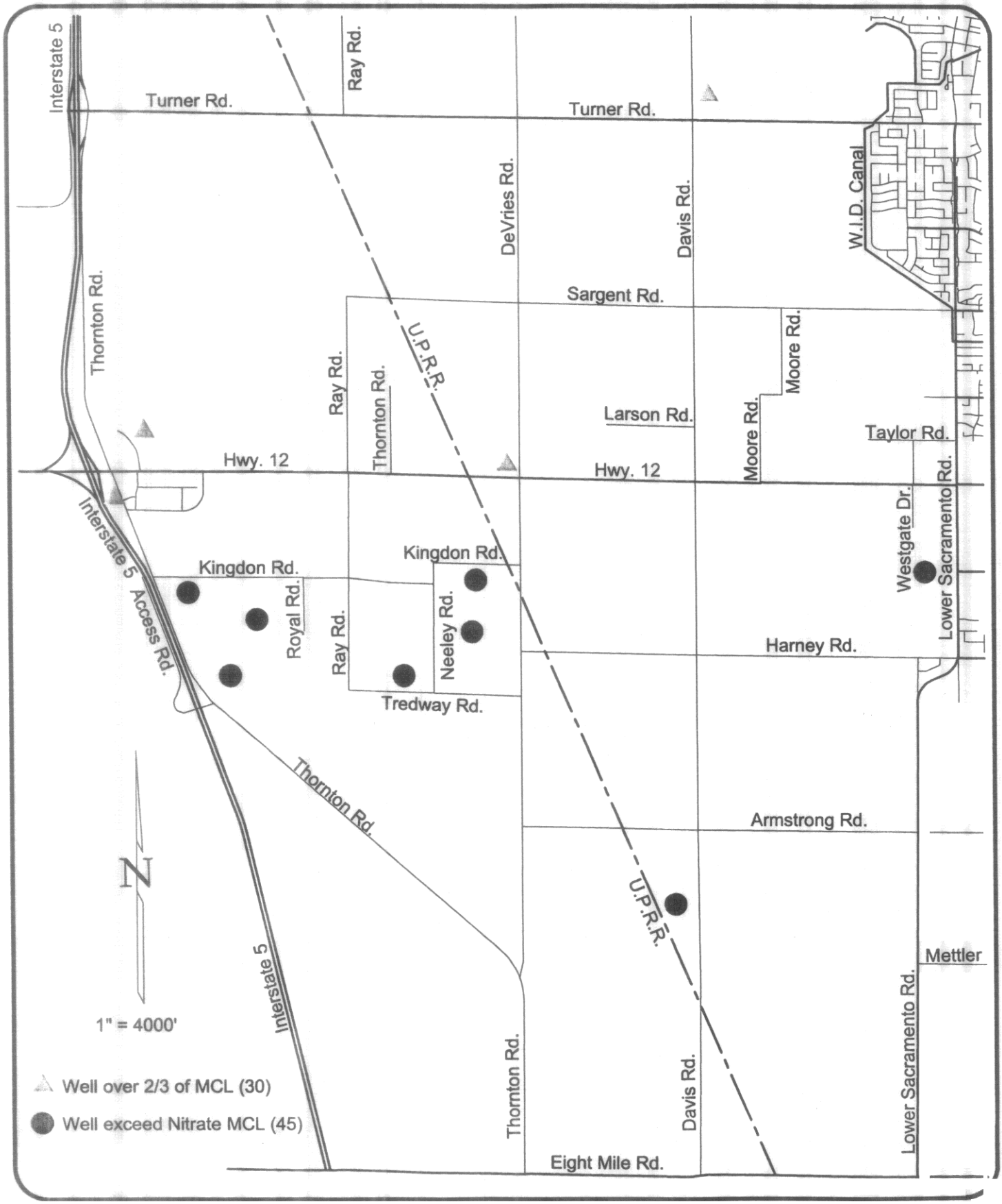
Simulated Groundwater Table - Equilibrium Future No Action Conditions – Lodi Area



CITY OF LODI
PUBLIC WORKS DEPARTMENT

Nitrate Levels



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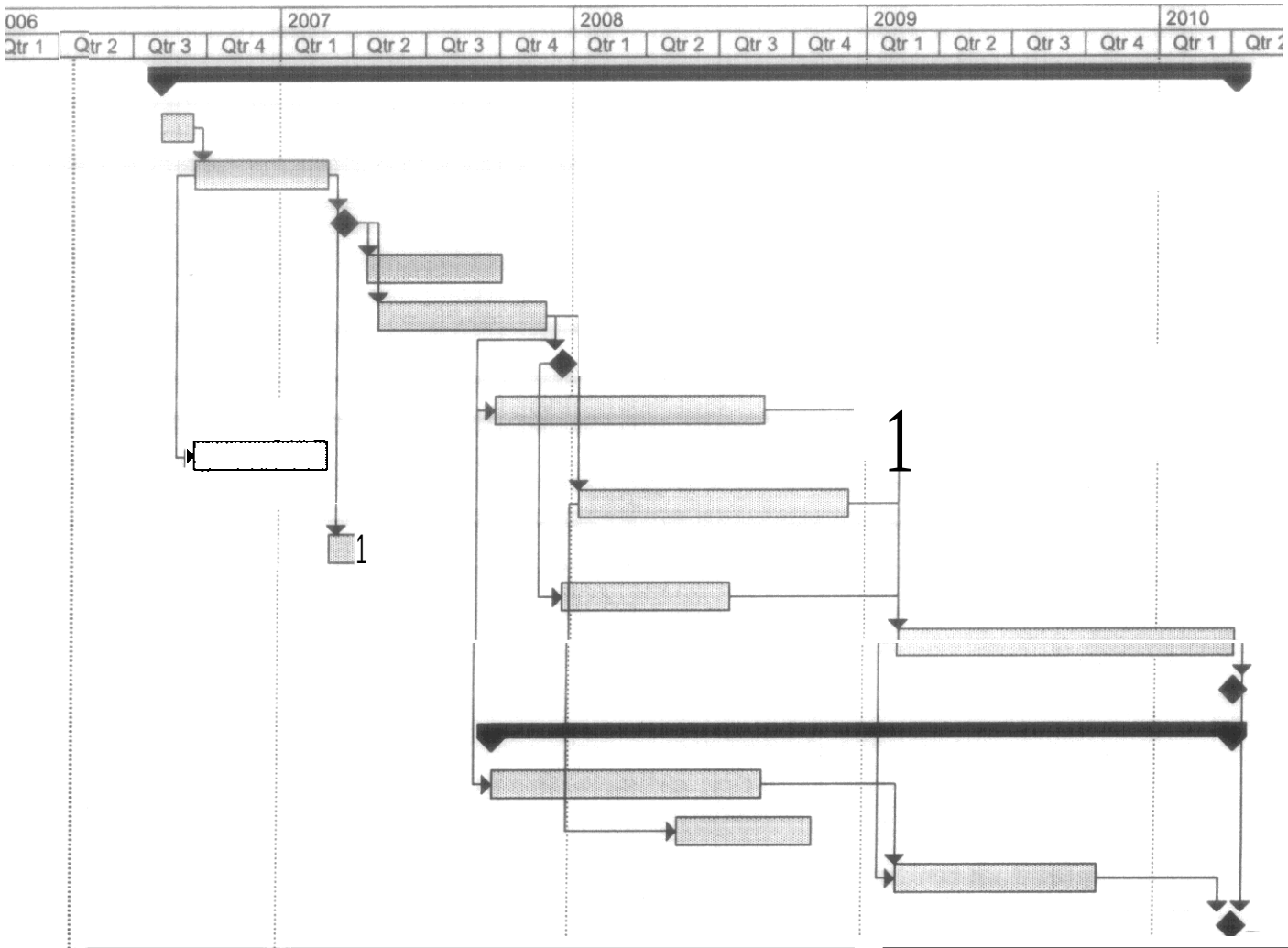
ID	Task Name
2	Alternatives Evaluation
3	Siting **Study**
4	Approval of Site Selection
5	Pilot Membrane Plant
6	Preliminary Design Report
7	Approval of PDR
8	Environmental Review
9	Permitting
10	Plant Design
11	Preliminary Financing Plan
12	Financing Plan
13	Plant Construction/Startup
14	Acceptance of Improvements
15	Transmission System
16	EnvironmentalReview
17	Design
18	Construction
19	Acceptance of Improvements



Project: Sched 1-13-06
Date: Tue 4/18/06

Task		Summary		Rolled Up Progress	
Critical Task		Rolled Up Task		Split	
Progress		Rolled Up Critical Task		External Tasks	
Milestone		Rolled Up Milestone		Project Summary	